

CLAIMS

1. A Ni-base directionally solidified superalloy consisting essentially of from 5.0 percent by weight to 7.0 percent by weight of Al, from 4.0 percent by weight to 16.0 percent by weight of Ta + Nb + Ti, from 1.0 percent by weight to 4.5 percent by weight of Mo, from 4.0 percent by weight to 8.0 percent by weight of W, from 3.0 percent by weight to 8.0 percent by weight of Re, 2.0 percent by weight or less of Hf, 10.0 percent by weight or less of Cr, 15.0 percent by weight or less of Co, from 1.0 percent by weight to 4.0 percent by weight of Ru, 0.2 percent by weight or less of C, 0.03 percent by weight or less of B and Ni and inevitable impurities as a balance.
2. The Ni-base directionally solidified superalloy as claimed in claim 1, wherein the superalloy includes from 2.8 percent by weight to 4.5 percent by weight of Mo.
3. The Ni-base directionally solidified superalloy as claimed in claim 1, wherein the superalloy includes from 4.0 percent by weight to 6.0 percent by weight of Ta.
4. The Ni-base directionally solidified superalloy as claimed in claim 1, wherein the superalloy consists essentially of from 5.8 percent by weight to 6.0 percent by weight of Al, from 5.5 percent by weight to 6.5 percent by weight of Ta + Nb + Ti, from 2.8 percent by weight to 3.0 percent by weight of Mo, from 5.5 percent by weight to 6.5 percent by weight of W, from 4.8 percent by weight to 5.0 percent by weight of Re, from 0.08 percent by weight to 0.12 percent by weight of Hf, from 2.0 percent by weight to 5.0 percent by weight of Cr, from 5.5 percent by weight to 6.0 percent by weight of Co, from 1.8 percent by weight to 2.2 percent by weight of Ru, from 0.05 percent by weight to 0.1 percent by weight of C, from 0.01 percent by weight to 0.02 percent by weight of B, and Ni and inevitable impurities as a balance.
5. The Ni-base directionally solidified superalloy as claimed in claim 1 to 4, wherein the superalloy includes from 0.01 percent by weight to 0.1 percent by weight of Si.

6. The Ni-base directionally solidified superalloy as claimed in claim 1 to 5, wherein the superalloy includes one or more elements selected from the group consisting of 2.0 percent by weight or less of V, 1.0 percent by weight or less of Zr, 0.2 percent by weight or less of Y, 0.2 percent by weight or less of La, and 0.2 percent by weight or less of Ce.
7. A Ni-base single-crystal superalloy consisting essentially of from 5.0 percent by weight to 7.0 percent by weight of Al, from 4.0 percent by weight to 16.0 percent by weight of Ta + Nb + Ti, from 1.0 percent by weight to 4.5 percent by weight of Mo, from 4.0 percent by weight to 8.0 percent by weight of W, from 3.0 percent by weight to 8.0 percent by weight of Re, 2.0 percent by weight or less of Hf, 10.0 percent by weight or less of Cr, 15.0 percent by weight or less of Co, from 1.0 percent by weight to 4.0 percent by weight of Ru, 0.2 percent by weight or less of C, 0.03 percent by weight or less of B, and Ni and inevitable impurities as a balance.
8. The Ni-base single-crystal superalloy as claimed in claim 7, wherein the superalloy includes from 2.8 percent by weight to 4.5 percent by weight of Mo.
9. The Ni-base single-crystal superalloy as claimed in claim 7, wherein the superalloy includes from 4.0 percent by weight to 6.0 percent by weight of Ta.
10. The Ni-base single-crystal superalloy as claimed in claim 7, wherein the superalloy consists essentially of from 5.8 percent by weight to 6.0 percent by weight of Al, from 5.5 percent by weight to 6.5 percent by weight of Ta + Nb + Ti, from 2.8 percent by weight to 3.0 percent by weight of Mo, from 5.5 percent by weight to 6.5 percent by weight of W, from 4.8 percent by weight to 5.0 percent by weight of Re, from 0.08 percent by weight to 0.12 percent by weight of Hf, from 2.0 percent by weight to 5.0 percent by weight of Cr, from 5.5 percent by weight to 6.0 percent by weight of Co, from 1.8 percent by weight to 2.2 percent by weight of Ru, from 0.05 percent by weight to 0.1 percent by weight of C, from 0.01 percent by weight to 0.02 percent by weight of B, and Ni and inevitable impurities as a balance.

11. The Ni-base single-crystal superalloy as claimed in claim 7 to 10, wherein the superalloy includes from 0.01 percent by weight to 0.1 percent by weight of Si.

12. The Ni-base single-crystal superalloy as claimed in claim 7 to 11, wherein the superalloy includes one or more elements selected from the group consisting of 2.0 percent by weight or less of V, 1.0 percent by weight or less of Zr, 0.2 percent by weight or less of Y, 0.2 percent by weight or less of La, and 0.2 percent by weight or less of Ce.